Dredged Material Evaluation

Marine Analysis Section

DREDGED MATERIAL EVALUATION

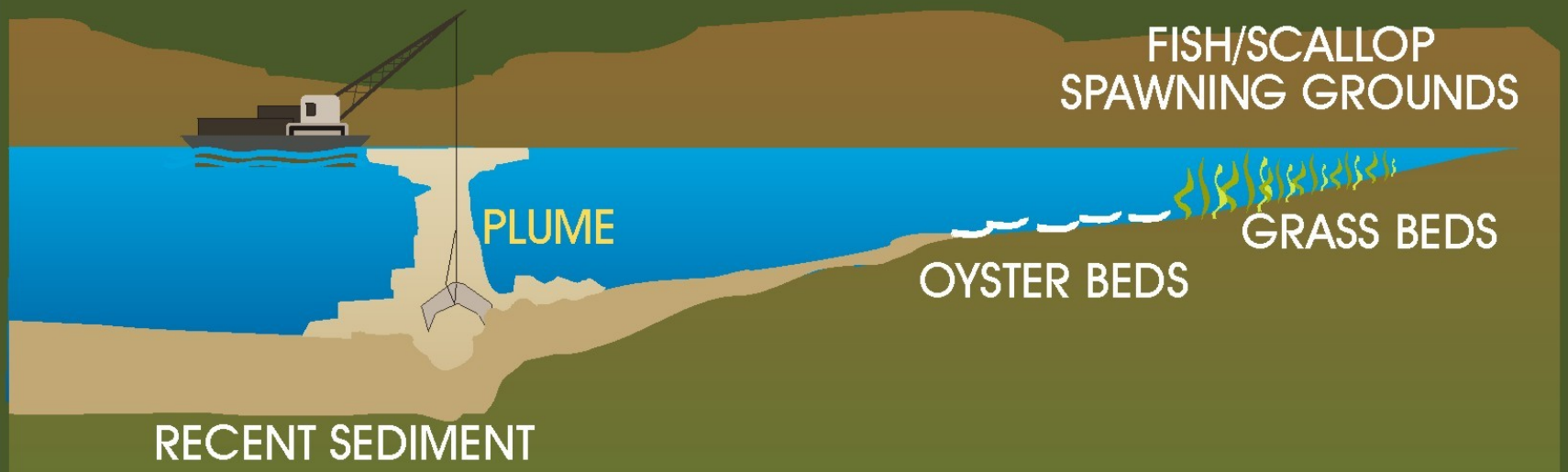
GOAL:

- To Minimize Adverse Effects At/Near:
  - The Dredging Site
  - The Disposal Site

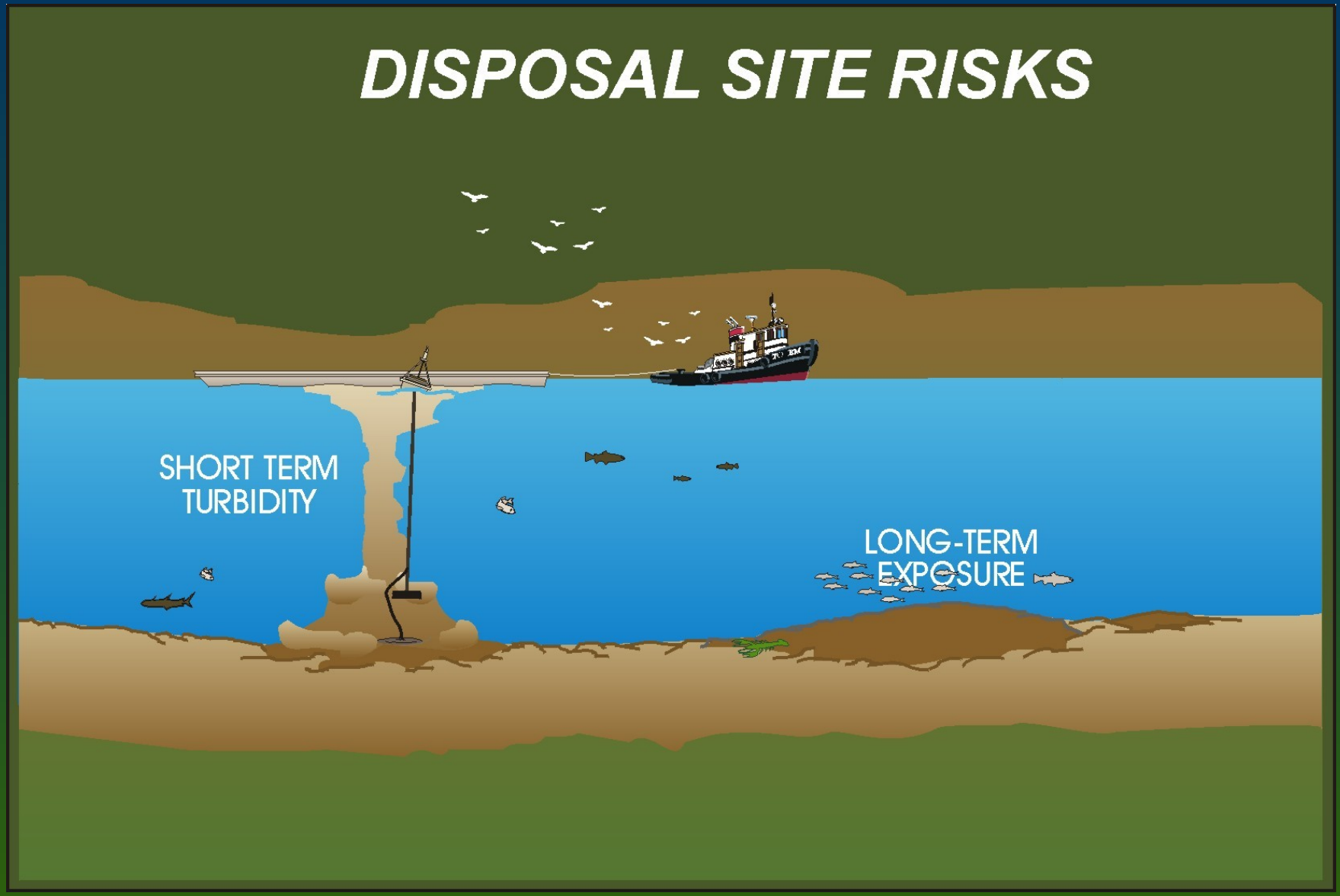
METHOD:

- Tiered Testing Protocol Based On
  - Ocean Dumping Act
  - Clean Water Act

DREDGING SITE RISKS



DISPOSAL SITE RISKS

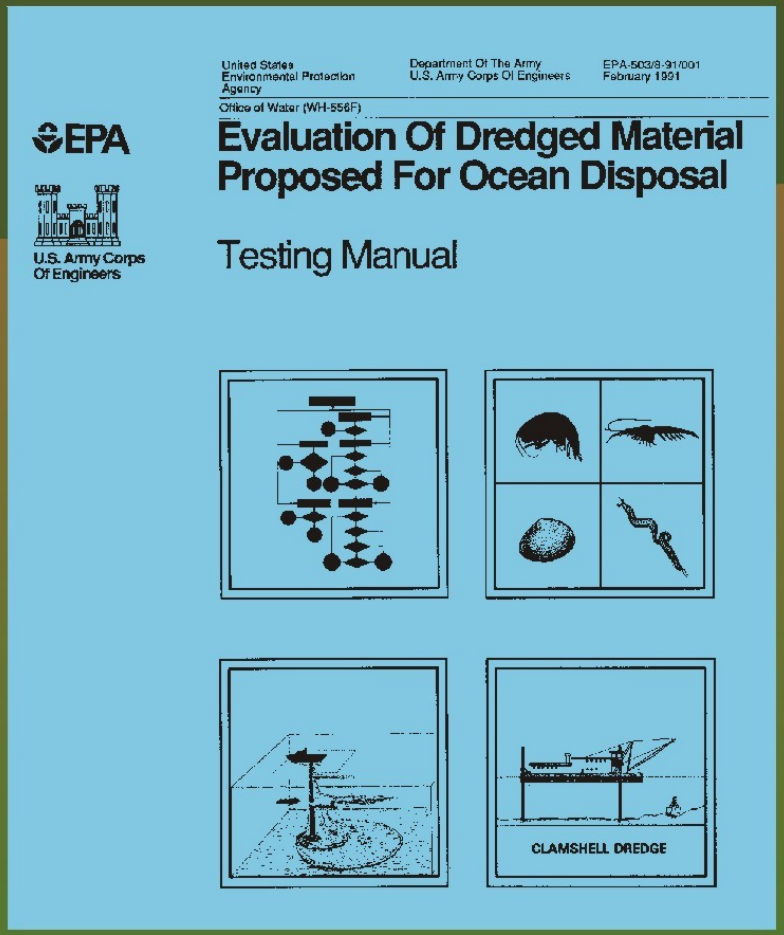


EVALUATIONS BASED ON:

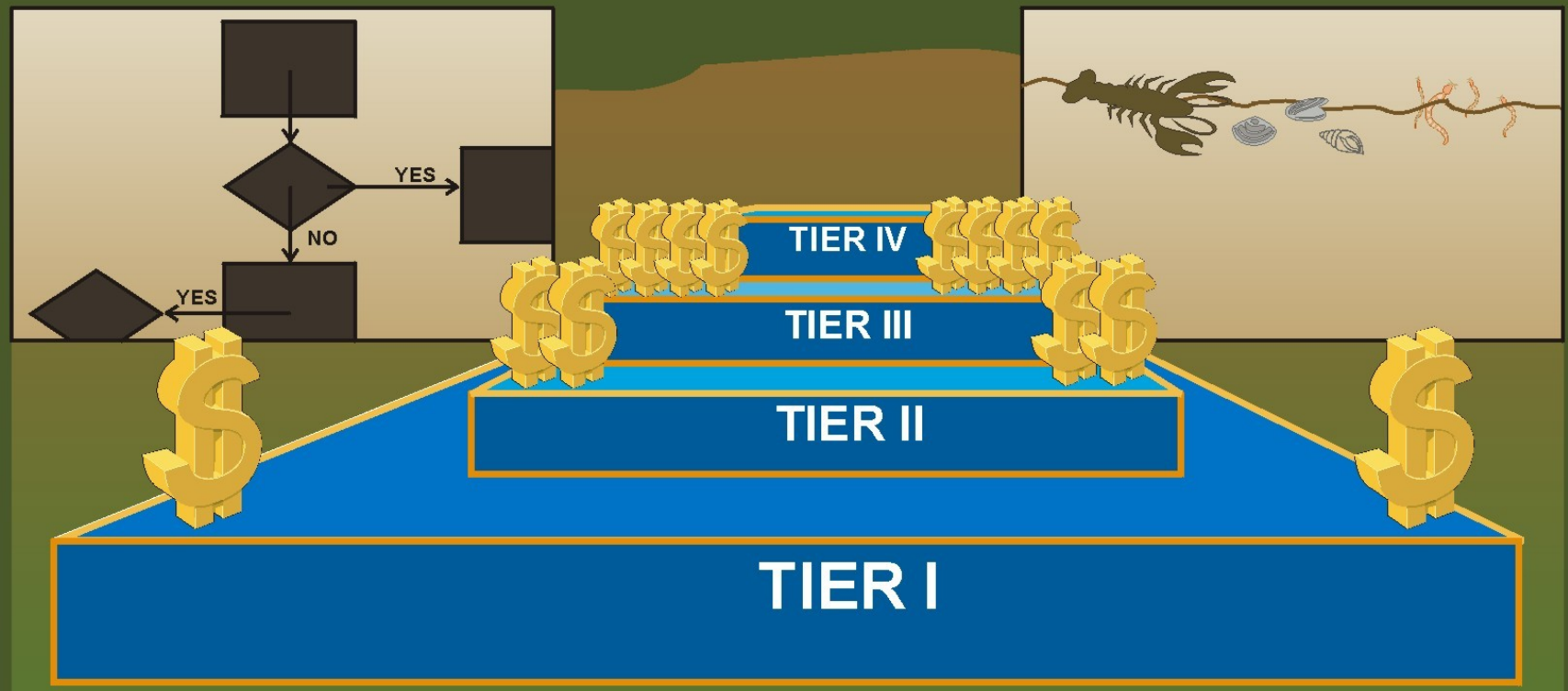
Ocean Disposal Act
MARINE PROTECTION RESEARCH
AND SANCTUARIES ACT

Clean Water Act
WATER POLLUTION CONTROL ACT

EVALUATIONS BASED ON:


United States Environmental Protection Agency
Department Of The Army U.S. Army Corps Of Engineers
EPA-503/8-91/001 February 1991
Office of Water (WH-556F)
EPA
U.S. Army Corps Of Engineers
Evaluation Of Dredged Material Proposed For Ocean Disposal
Testing Manual
CLAMSHELL DREDGE

TIERED TESTING

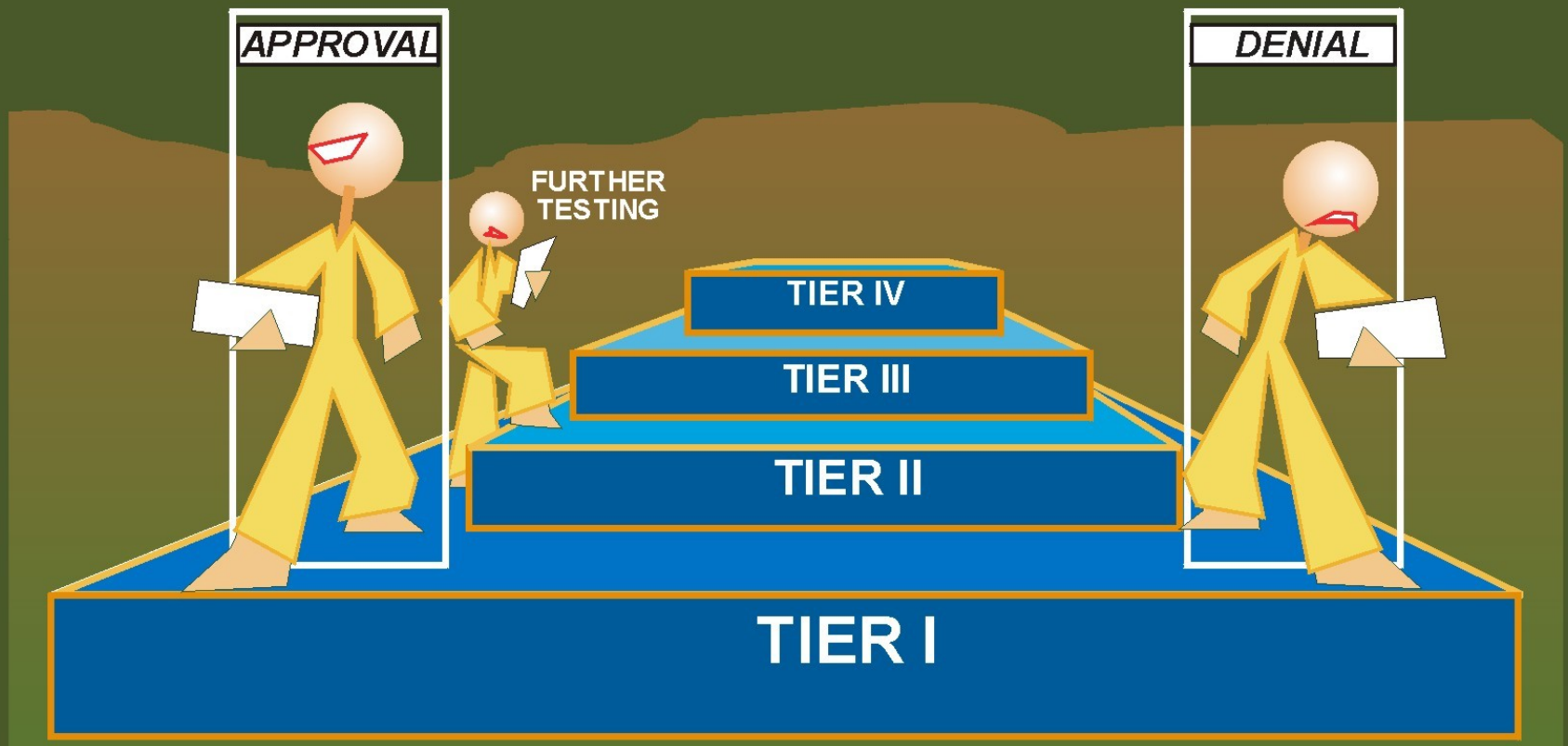


Testing Costs Increase with Tiers

- Chemical Tests → $ >2,500
- Toxicity Tests → >$10,000
  - Benthic/Sediment
  - Water Column
- Bioaccumulation → >$95,000

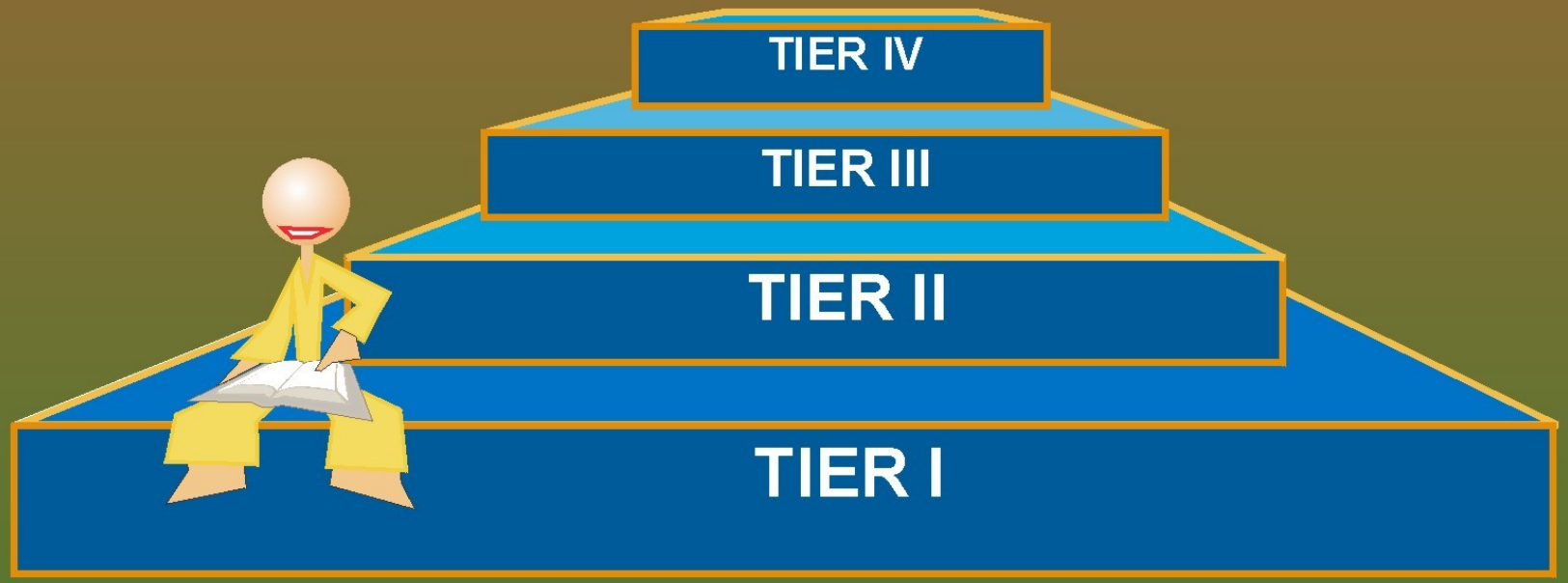
Total → >$100,000

TIERS ARE LEVELS OF TESTING WITH THREE POSSIBLE OUTCOMES AT EACH LEVEL

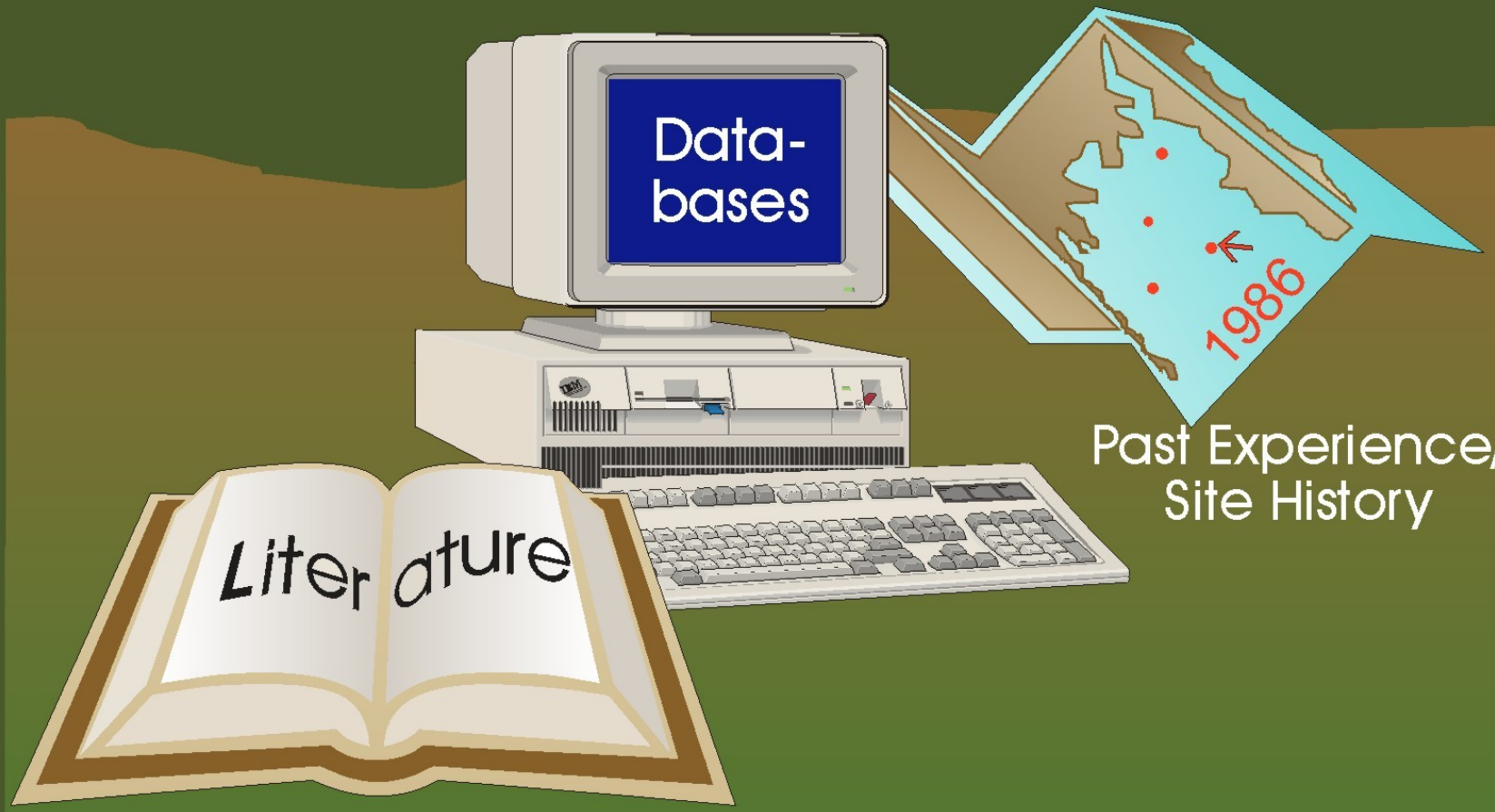


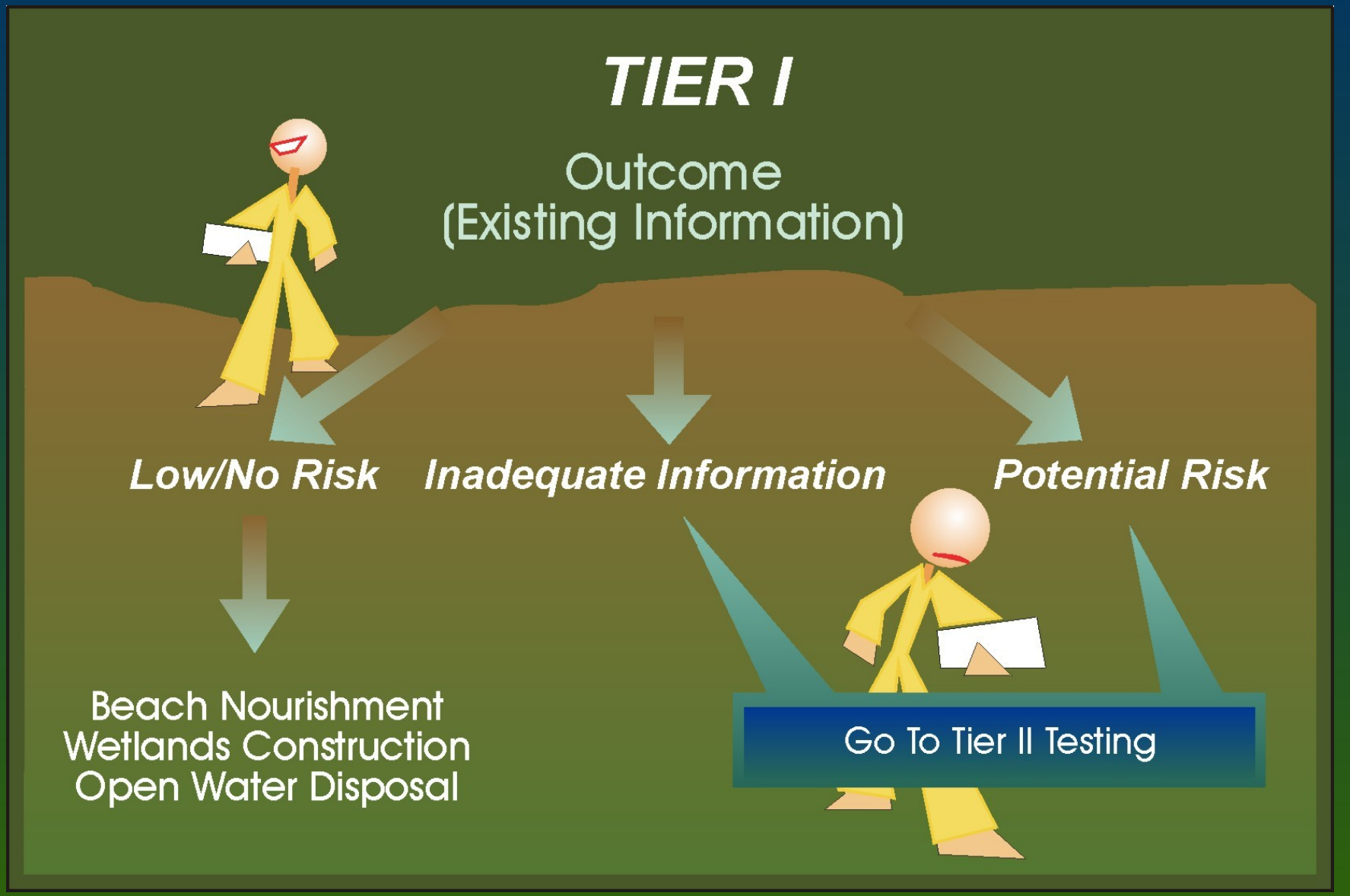
TIER I
PRELIMINARY EVALUATION

- COMPILES INFORMATION
- IDENTIFIES CONTAMINANTS
- DETERMINES COMPLIANCE



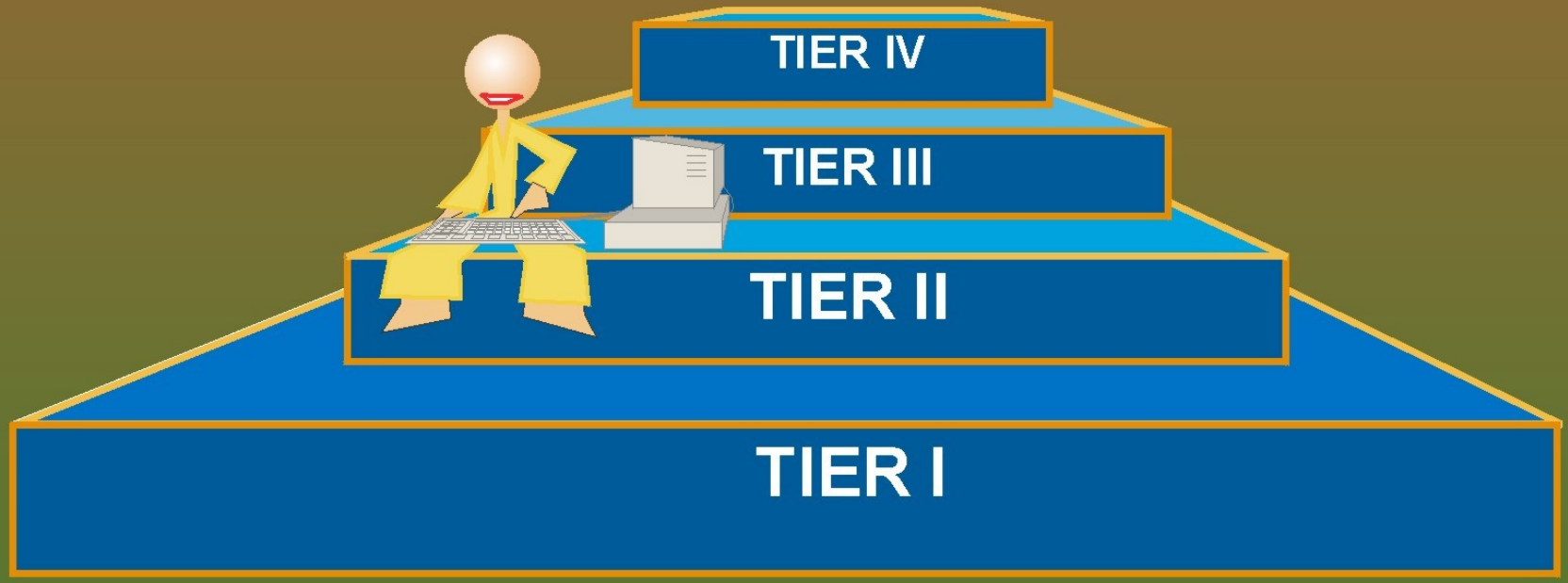
TIER I METHODS



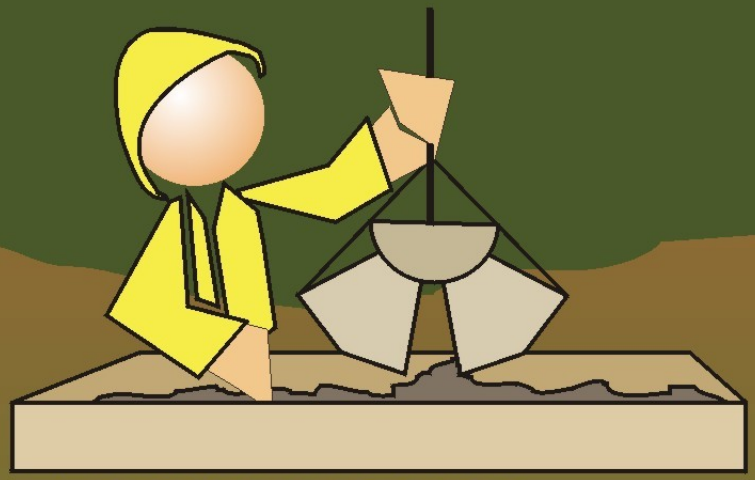

TIER I
Outcome
(Existing Information)
Low/No Risk
Inadequate Information
Potential Risk
Beach Nourishment
Wetlands Construction
Open Water Disposal
Go To Tier II Testing

TIER II
RELIABLE, RAPID SCREEN FOR POTENTIAL IMPACT ON:

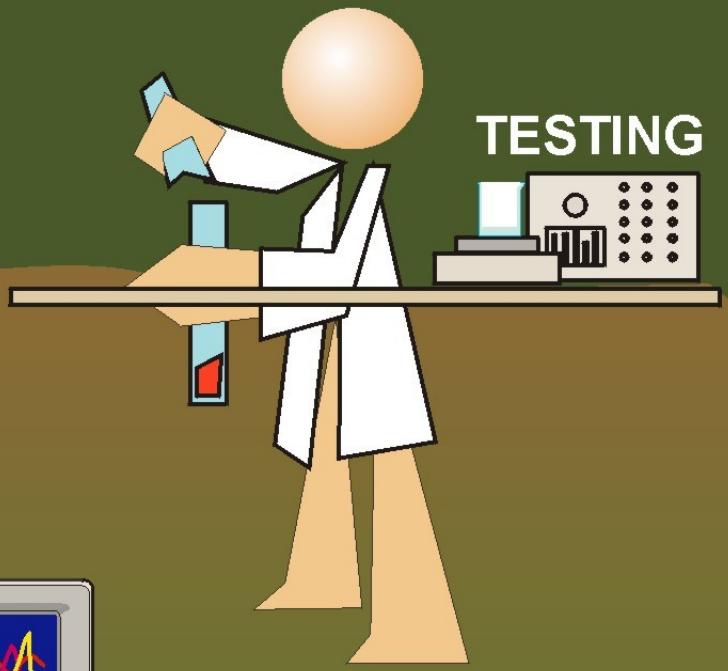
- Marine Water Quality
- Accumulation in Marine Animals



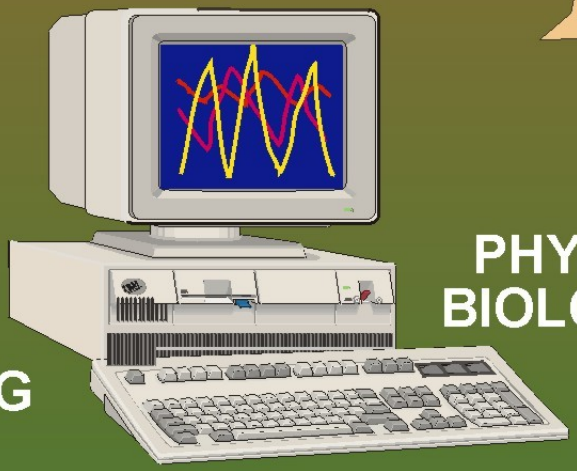
TIER II TESTING METHODS



RECONNAISSANCE
SAMPLING

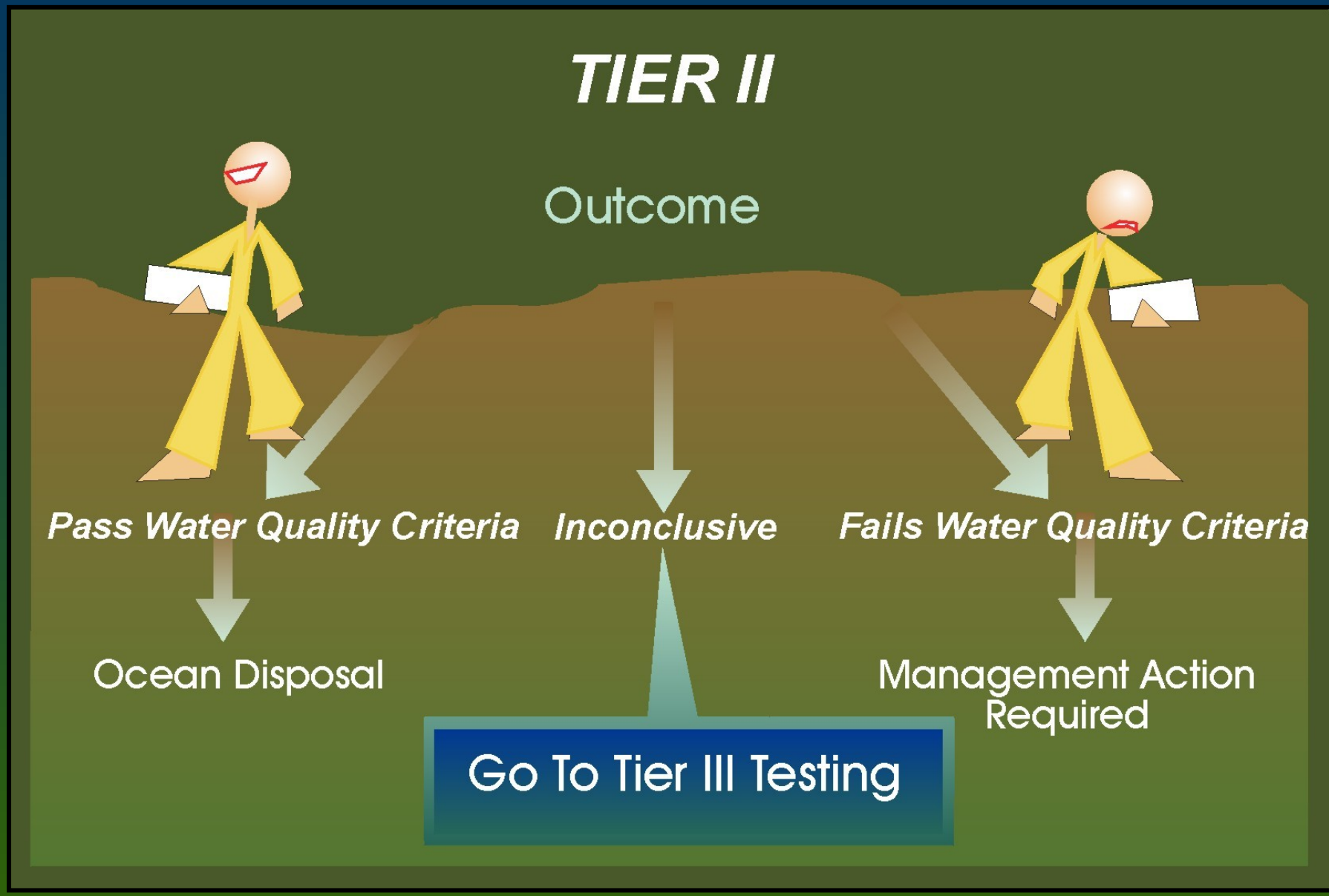


TESTING



MODELING

PHYSICAL IMPACT
BIOLOGICAL IMPACT


TIER II
Outcome
Pass Water Quality Criteria
Inconclusive
Fails Water Quality Criteria
Ocean Disposal
Management Action Required
Go To Tier III Testing

TIER III
BIOLOGICAL EFFECTS TESTING

- Toxicity
- Bioaccumulation

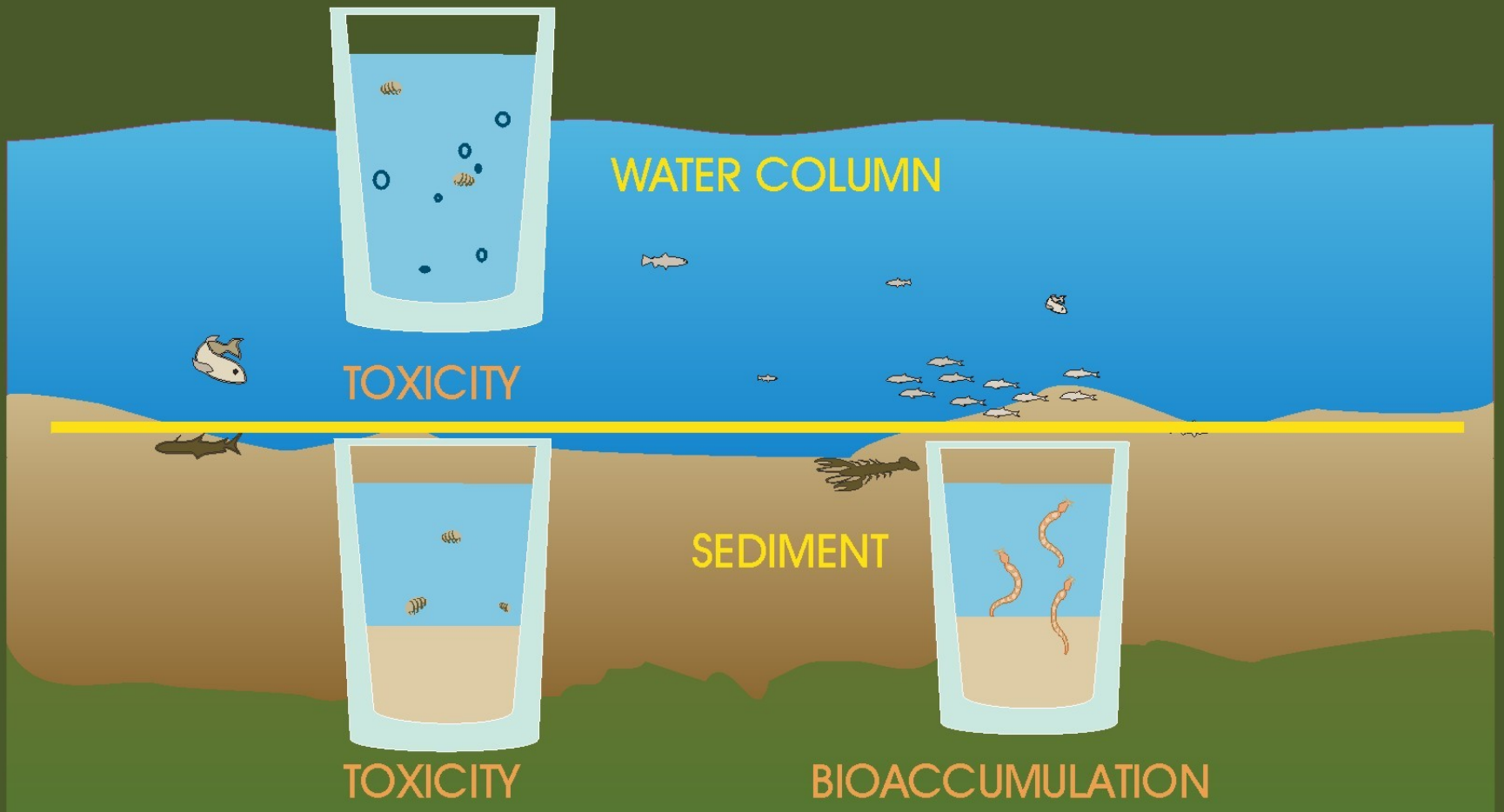
TIER IV

TIER III

TIER II

TIER I

TIER III TESTING METHODS



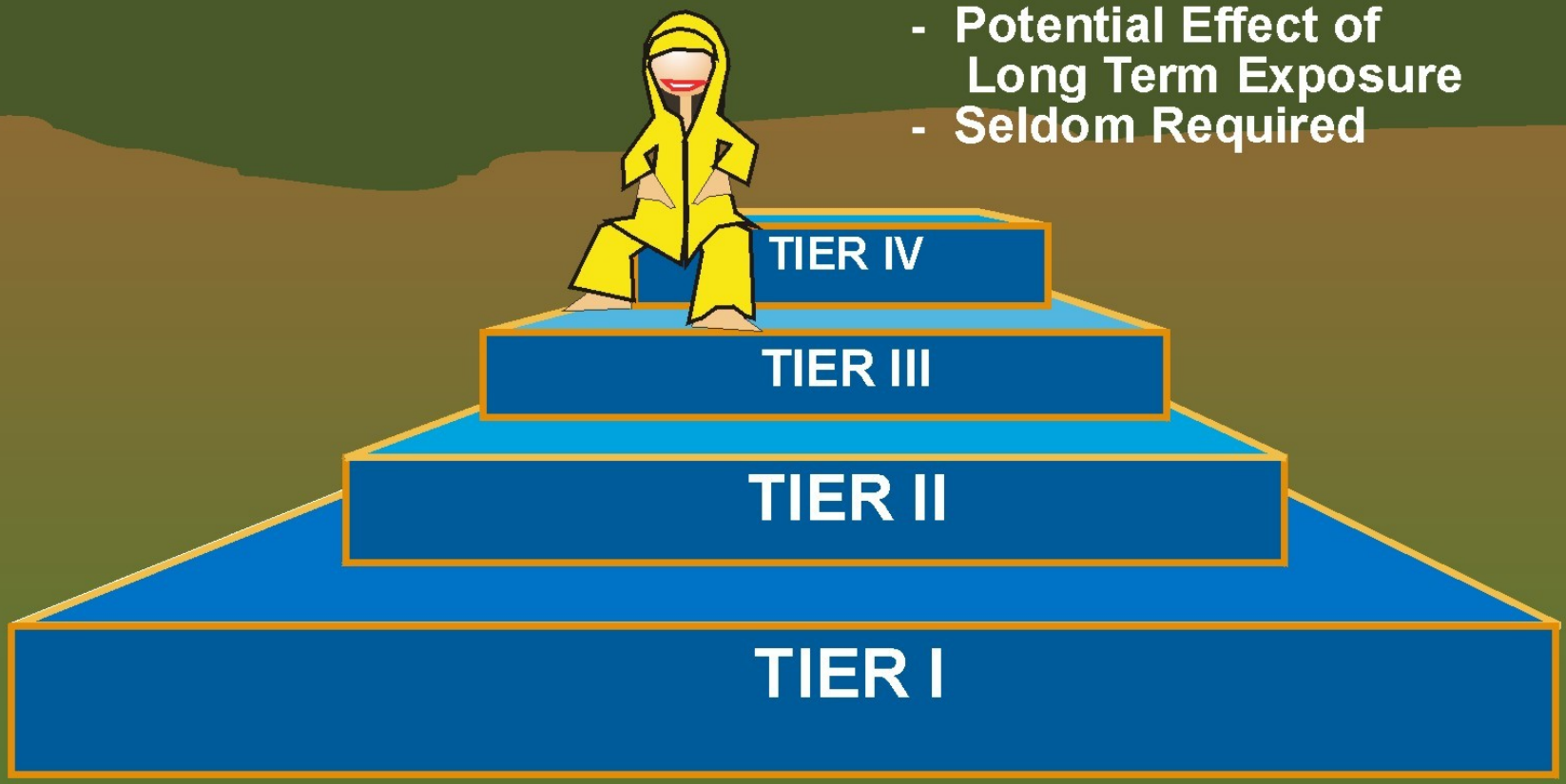
Typical Bioassay Species (Amphipod)

TIER III

Tier III Outcome
Toxicity
ACCEPTABLE RESULT
Dredged Material Shows
Comparable Effect as
Reference Area
UNACCEPTABLE RESULT
Dredged Material More Effect
Than Reference Area
Ocean Disposal Questionable
or Acceptable with
Special Management
(e.g. Capping)
Assess
Bioaccumulation
Potential
Acceptable
Nonacceptable
Go To Tier IV Testing

TIER IV
Site and Project Specific Testing

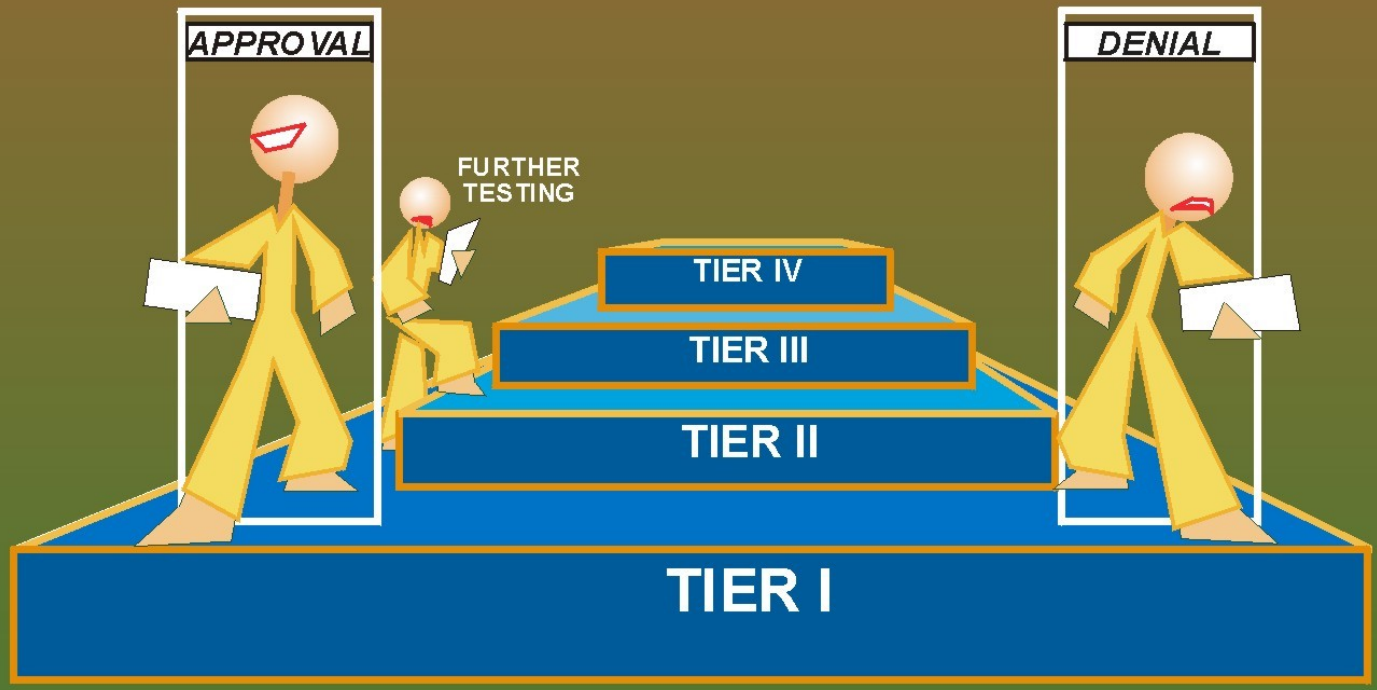
- Potential Effect of Long Term Exposure
- Seldom Required



THE TIERED APPROACH

Summary:

- Used to Systematically Evaluate Projects
- A Protocol to Save Unnecessary Time and Expense
- Criteria Are Based on Best Professional Judgement



NEW ENGLAND EXPERIENCE

VOLUME OF DREDGING PROJECTS:

EVALUATION:

ACCEPTABLE
~95%

UNACCEPTABLE
< 5%

CONDITIONS:

SUITABLE FOR OPEN WATER DISPOSAL
60 TO 80%

SUITABLE FOR OPEN WATER DISPOSAL WITH SPECIAL MANAGEMENT
20 TO 40%